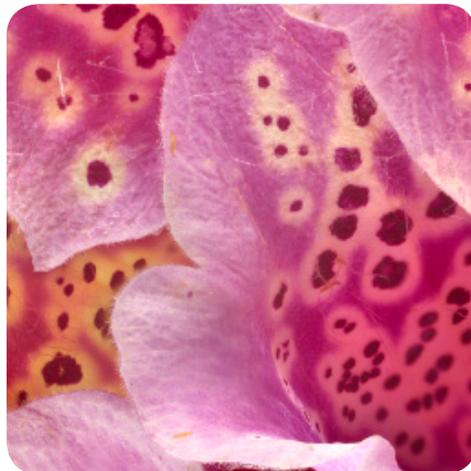
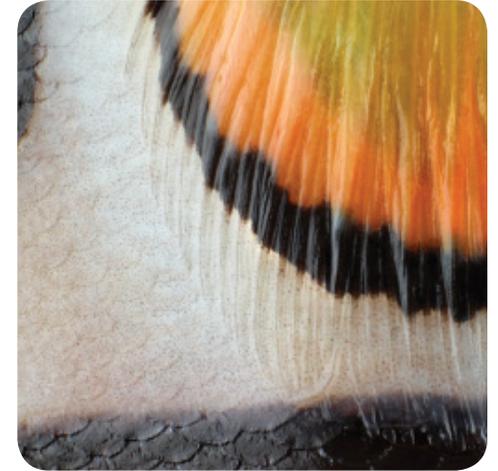


ABBOTT HALL OF CONSERVATION RESTORING EARTH EXHIBITION CLIMATE CHANGE GUIDE



INTRODUCTION

The Chicago Community Climate Action Toolkit includes a number of links to The Field Museum's newest exhibition, the Abbott Hall of Conservation *Restoring Earth*, which highlights the Museum's conservation work in the Chicago Region, the Andes/Amazon, and around the world. We encourage you to visit the exhibition to learn more about climate change and what you and your community can do to make a difference.

This guide highlights eight "Tour Stops" in the exhibition that reinforce and expand the following key ideas about climate change and climate action from the Chicago Community Climate Action Toolkit:

KEY IDEAS:



When we do things locally that add carbon dioxide and other greenhouse gases to the atmosphere, we affect people, plants, and animals around the world.



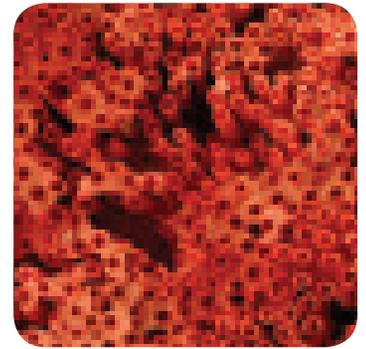
But this also means that our local actions to help address climate change actually have global impact.



The exhibition especially shows us that protecting and caring for natural systems anywhere helps address climate change everywhere.

Planning a Group Visit to The Field Museum
Illinois school or youth groups within the adult-youth chaperone ratio receive free general admission to the Museum with pre-registration. For details visit:
<http://fieldmuseum.org/schools/field-trip-programs>.
For information on planning an adult group visit to the Museum, see:
<http://fieldmuseum.org/visit/group-sales/group-planners>.

Restoring Earth provides an opportunity for building on the Toolkit materials to understand Chicago region climate change within a global context. We recommend that you review the Toolkit before taking this tour, especially Climate Change in the Windy City and the World and Climate Action Plan for Nature: Community Action Strategies, both available at:
<http://climatechicago.fieldmuseum.org/learn>.



1 ANDES/AMAZON MAP OF PROTECTED AREAS

LOCATION: After entering the exhibit, continue straight until, on your left, you reach the green wall with a large navy blue map titled “21.9 Million Acres.”

KEY IDEAS



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KEY POINTS

- 1.** The Amazon rainforest is one of the world’s greatest natural resources. Because its vegetation continuously recycles carbon dioxide into oxygen, it has been described as the “Lungs of our Planet.” The Amazon holds 20% of the Earth’s fresh water and produces a fifth of Earth’s oxygen.
- 2.** The Amazon is also a “carbon sink,” meaning it captures carbon from the atmosphere and stores it in the above and below ground portions of the trees and in the soil. The forest typically absorbs nearly 2 billion tons of carbon dioxide each year.
- 3.** Massive droughts and fires, like the ones the Amazon experienced in 2005 and 2010 (“100-year” events that occurred 5 years apart), are expected to increase in frequency and intensity in the future due to climate change. The 2005 drought and related fires caused a massive die-off of trees and inverted the carbon sink process, which means it released an extra 5 billion tons of CO₂ into the atmosphere. This is more than the combined annual emissions of Europe and Japan.
- 4.** We need to protect the Earth’s forests because they provide critical ecosystem services, or benefits to people, including acting as carbon sinks to lessen climate change. They also have some of the highest biodiversity, or variety of plants and animals, found anywhere on the planet.
- 5.** Deforestation of the forests—cutting down trees and burning them—releases about 17% of all annual human-produced greenhouse gas (GHG) emissions. This means it is a major contributor to climate change.
- 6.** The Field Museum’s division of Environment, Culture, and Conservation (ECCo) is working on a REDD project in Cordillera Azul National Park in Peru. REDD stands for Reducing Emissions from Deforestation and Forest Degradation. REDD aims to create a carbon market: a system of economic incentives through which polluters in developed countries like the U.S. can offset their pollution by paying to keep large forests, like the forest in Cordillera Azul National Park, intact.

DISCUSSION QUESTIONS

- 1.** How does protecting forests in the Andes/Amazon benefit us in the Chicago Region?
- 2.** How can protecting natural areas help mitigate climate change?

The video mentioned in point 6 is also online at:
<http://restoringearth.fieldmuseum.org/>
The section on REDD runs from minute 15:30–18:00.



LOCATION: Continue straight past the map to your right, towards the screen wall and sitting cubes. At this wall, turn right. Walking towards the lime green wall, Station 2 will be on your right. Read the plaques surrounding the Maijuna ax and chainsaw.

MAIJUNA COMMUNITY WALL PANELS **2**

KEY IDEAS



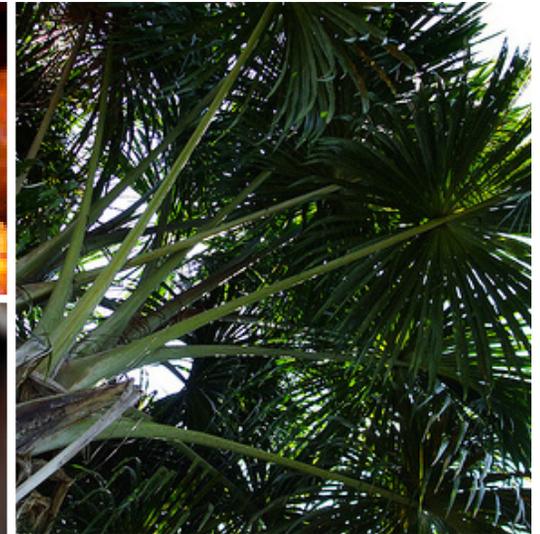
But this also means that our local actions to help address climate change actually have global impact.

KEY POINTS

- 1.** Aguajal palms are a vital part of their swamp ecosystem. Animals and people depend on them for food and shelter. If the palms disappear, so may the swamps, making the future of the Maijuna people uncertain and releasing large amounts of CO₂ into the atmosphere.
- 2.** In recent years, growing urban demand for aguaje fruit has stimulated more cutting of aguaje palms to rates that threaten the survival of the palms, of animals that depend on them, and of the swamps themselves.
- 3.** The Maijuna have chosen an active management plan to insure the future of Aguajal palm swamps. This includes climbing trees to harvest fruit rather than cutting the trees down. This approach keeps in place most of the carbon now stored in swamps, instead of releasing it into the air. It also maintains an ecosystem that provides the Maijuna with animals to hunt and an ongoing source of cash income from sustainably harvested fruit.

DISCUSSION QUESTIONS

- 1.** How does the work we do in the Chicago region add carbon to the atmosphere?
- 2.** How could we do our work differently to reduce this carbon output while also benefiting ourselves in other ways—like the Maijuna are doing? Think not just in terms of saving or making money, but also possibilities like improving health, increasing leisure time, etc.



3 MIDDLE VIDEO IN CORAL REEF SECTION

LOCATION: Turn around and walk towards the wall opposite of the Majiuna section, across the aisle that runs down the middle of the exhibition. Head towards the large coral reef picture to your left. The video will be to the far left under the green sign "Protecting the Foundation of an Ecosystem." Select the smokestacks, which are the middle image.

KEY IDEAS



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The exhibition especially shows us that protecting and caring for natural systems anywhere helps address climate change everywhere.

KEY POINTS

1. When CO₂ levels in the atmosphere increase, more CO₂ dissolves into the oceans. This decreases the pH of seawater, meaning that the oceans become more acidic.
2. Ocean acidification has the potential to greatly harm sea life because it interferes with the ability of sea creatures to create the calcium carbonate structures they need to survive.
3. Affected species include reef-forming corals, many species of mollusks and crustaceans, some algae, and certain plankton.
4. Oceans are also suffering from warmer temperatures associated with climate change. Warmer temperatures lead coral to expel symbiotic algae, which causes them to bleach (the corals lose their colors). Bleaching can kill coral and destroy the reefs that coral creates.
5. Coral reefs are the rainforests of the ocean, meaning they are home to an extraordinary variety of plants and animals. Loss of these reefs due to acidification and warmer water temperatures will have enormous impacts on much of ocean life and on the hundreds of millions of people who rely on these ocean resources to work, live, and play.

DISCUSSION QUESTIONS

1. What everyday actions of our own add carbon to the atmosphere?
2. What could we do differently to reduce the amount of carbon we emit?

The video featured in Tour Stop 3 is also online at:

<http://restoringearth.fieldmuseum.org/media.html>

Scroll down to "Reefs" and click on the smokestack image to view "The impact of CO₂ on coral reefs."



LOCATION: After viewing the coral reef video, head left to the other videos in the section, which will be directly to the right of the red coral reef picture. Select the image with the tree and rain to view the video.

ISLANDS VIDEO IN THE ISLANDS SECTION

KEY IDEAS



But this also means that our local actions to help address climate change actually have global impact.

KEY POINTS

- 1.** Retaining forest cover is crucial for maintaining the ecosystem services, or benefits to people, that the forest provides. These include improving water infiltration and reducing flooding and erosion.
- 2.** With climate change, there will be more extreme precipitation events (rain and snow), which will increase flooding risk and erosion. Extreme heat will also add stress. This means that maintaining forests will be even more important as the climate changes.
- 3.** Forests store significant amounts of carbon, so maintaining forests has value for lessening climate change by reducing the amount of carbon in the atmosphere. Forests also help people cope with a changing climate by reducing the effects of extreme storms.
- 4.** Forests are also important because they maintain most of the world's biodiversity, or variety of plants and animals.
- 5.** For similar reasons to those demonstrated in this video from the Philippines, it is also important to take care of natural areas in the Chicago region in the face of climate change. Natural areas everywhere store carbon and lessen the effects of a changing climate.

DISCUSSION QUESTIONS

- 1.** What natural areas are in, or near, our community?
- 2.** How do we use them and take care of them?
- 3.** What more could we be doing?

The videos featured in Tour Stop 4 are also online at:
<http://restoringearth.fieldmuseum.org/media.html>
Scroll down to "Islands" and click on the image of the woman drinking water to view "Why protect mossy forests?"



5 CHICAGO REGION COMMUNITY SECTION

LOCATION: Continue to your right towards the “Conservation is Collaboration” section against the right wall. Explore this whole section about communities working on a variety of projects related to restoration and climate change. Watch a few of the videos against the back wall.

KEY IDEAS



But this also means that our local actions to help address climate change actually have global impact.

KEY POINTS

1. All over the Chicago region, communities are taking action that benefits the climate and their communities, too.
2. The Chicago region is rich in ethnic diversity—and many of the environmental programs and activities highlighted in this section celebrate heritage traditions that offer sustainable alternatives to today’s carbon-intensive lifestyles, like spending time outside or eating seasonal foods. (See especially the video, “Our food and the planet’s health”—with the image of the woman holding the chicken—which showcases different food cultures in the Chicago area.)
3. This section also highlights the importance of collaborating to achieve environmental and climate action. (See especially the video, “Lessons from an ancient civilization”—with the image of the statue—which talks about the need to work together to share and conserve water. This video also emphasizes Point #2 about learning from the past.)

DISCUSSION QUESTIONS

1. What do we already do that can be considered “climate action”—even if we don’t realize it?
2. What traditions from our cultural and community heritages could be considered “climate-friendly”?
3. Does anyone in our families or communities still practice these traditions?
4. What else could we be doing?



The videos featured in Tour Stop 5 are also online at:
<http://restoringearth.fieldmuseum.org/media.html>
Scroll down to “Communities.”

LOCATION: Next, head towards the Chicago region theatre, which has two big screens.

It is located at the back of the exhibit.

Watch the videos about restoring natural areas in the Chicago region.



KEY IDEAS



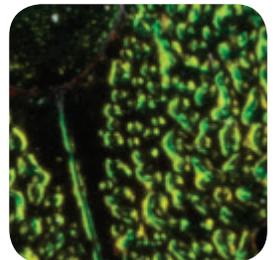
When we do things locally that add carbon dioxide and other greenhouse gases to the atmosphere, we affect people, plants, and animals around the world.

KEY POINTS

- 1.** Important work is being done to restore health to natural areas in the Chicago region. Due to the extensive landscape alteration that has occurred, very little of the original prairie and savanna habitat remains.
- 2.** Ecological restoration is an important strategy for helping local plants and animals adapt to changes in our climate. Healthy, connected natural areas are better able to withstand the additional stress of a changing climate. In addition, recent research has shown that healthy natural areas are able to store more carbon than degraded areas.
- 3.** The fragments that do remain are typically small, isolated, and in poor condition due to lack of fire, altered drainage, and pollution. As a result, invasive species have crowded out native species and created too much shade for prairie species to thrive. Restoring light and reintroducing fire to natural areas are necessary actions to restore the health and vitality of prairies and savannas.

DISCUSSION QUESTIONS

- 1.** What natural areas are in or near our community?
- 2.** How do we use them and take care of them?
- 3.** What more could we be doing?





LOCATION: In the Chicago region theatre, located towards the exhibit's exit.

KEY IDEAS



When we do things locally that add carbon dioxide and other greenhouse gases to the atmosphere, we affect people, plants, and animals around the world.

KEY POINTS

- 1.** To illustrate the dramatic landscape alteration that has occurred, click on the map table layer "Pre-Settlement" and then compare it to the layer "Current Day."
- 2.** Natural areas are important as both climate mitigation and adaptation strategies:
 - Vegetation and soil store carbon, so keeping natural areas intact and healthy enables them to continue being "carbon sinks." This strategy is called an "ecosystem-based approach" to mitigating—or reducing the impacts of—climate change.
 - In addition, as the climate changes, many habitats will shift northward (or upward in high elevation areas). Species will need to be able to move along with these shifts in habitats. Currently, the fragmented landscape of the Chicago region presents many obstacles for species to move or migrate. Creating connections among and between existing natural areas is a way to help species adapt and move as the climate becomes warmer and drier.
- 3.** To illustrate the Chicago region's vision for connectivity, show the map layer "Future Vision." This represents the Green Infrastructure Vision that is part of our region's Go to 2040 regional plan. The Vision is a guide for the protection and development of an accessible, interconnected network of healthy ecosystems that contribute to economic vitality and a high quality of life for all the region's residents.

DISCUSSION QUESTIONS

- 1.** What natural areas are in or near our community?
- 2.** How do we use them and take care of them?
- 3.** What more could we be doing?



LOCATION: Behind the big theatre videos, as you walk towards the exhibition exit.

WALL GRAPHICS OF NATIVE ILLINOIS PRAIRIE PLANTS

KEY IDEAS



When we do things locally that add carbon dioxide and other greenhouse gases to the atmosphere, we affect people, plants, and animals around the world.

KEY POINTS

1. The first graphic, located to the left of the augmented reality video kiosk to the right of the “Local Wilderness” sign, shows a native plant garden that was recently installed just outside the the Museum’s north entrance. Using native plants in our gardens and other green spaces is an important climate action strategy for both mitigation and adaptation.
2. The next graphic (to the right of the augmented reality kiosk) shows the long root systems of native prairie plants. These complex root systems store more carbon than short-rooted plants like lawn grass. Since these plants are continually growing and shedding old plant parts, they are adding organic matter, or carbon, to the soil. Additionally, the long, complex root systems of native plants create pathways in the soil that help rainwater soak directly into the ground instead of flowing to nearby sewers or waterways.

DISCUSSION QUESTIONS

1. What natural areas are in or near our community?
2. How do we use them and take care of them?
3. What more could we be doing?



We hope this tour provided you with a better understanding of the connections between natural areas and climate change, and the ways in which our actions in the Chicago region impact people, plants, and animals around the world—and vice versa. To learn more, visit the Chicago Community Climate Action Toolkit at climatechicago.fieldmuseum.org and the *Restoring Earth* website at <http://restoringearth.fieldmuseum.org/>.